



EXPONENTIAL FUNCTIONS: THE BIG PICTURE

Name: _____ Per: _____

$$y = a \cdot b^x + k$$

	Given initial value (x=0)	Not given initial value
Asymptote at y=0	<p>Project: Sequence Books for Kids</p> <p>An exponential function has an initial value of 2 and passes through the point (3, 128). It also has an asymptote at y=0. Find the equation of the function.</p> <p><i>*This would be a similar problem to say you start with 2 rabbits. On the 3rd day, you have 128 rabbits.</i></p>	<p>Project: Exponentially Better!</p> <p>An exponential function passes through (2, 16) and (6, 256). It also has an asymptote at y=0. Find the equation of the function.</p> <p><i>*This would be a similar problem to say in Year 2, your item is worth \$16 and in Year 6, it's worth \$256.</i></p>
Asymptote at y=k	<p>Project: Who Killed Steve?</p> <p>An exponential function passes through (0, 10) and (2,7). It also has an asymptote at y=6. Find the equation of the function.</p> <p><i>*This would be a similar problem to say that you first measured Steve's body at 10 degrees. 2 hours later, it was 7 degrees.</i></p>	<p>CL 7-232. An exponential function passes through (3, 7.5) and (4, 6.25). It also has an asymptote at y=5. Find the equation of the function.</p> <p>If the equation also passes through (8, w), what is the value of w?</p> <p>**NOTE: You can use this method for ALL exponential function problems!!</p>

CSI: DA VINCI

Because of your incredible work on solving Steve's murder, you've been hired as a CSI intern in downtown Los Angeles! Metropolitan, city life treats you pretty well, where the weather is constantly warm at 80°. In an interesting murder investigation, you are called to the scene to help the lead investigator, Agent 008, and give your expert advice.

For more than three hours now, Dr. Dedman had been performing an autopsy on the Sideroad Slasher's latest victim, and you too are beginning to get impatient. *"Dr. Dedman, don't you need to take a break?"* Agent 008 queried. *"You've been examining this body for hours! Even if there were any clues, you probably wouldn't see them at this point."*

"I don't know," Dr. Dedman replied, *"I just have this feeling the Slasher slipped up and left a clue. We just have to find it."*

"Well, I have to check in with headquarters," 008 stated. *"Do you mind if I step out for a couple of hours?"*

"No, that's fine," Dr. Dedman responded. *"Maybe I'll have something by the time you return."*

Some time later, Agent 008 sighed deeply as he returned to the coroner's office. Foust gave his usual greeting: *"Would the secret guest please sign in?"* he would say, handing a pen to 008 as he walked through the door. *"Sign in again,"* he thought to himself.

"Annoying!" 2:45 PM.

Coroner's Office – Please Sign In		
Name	Time In	Time Out
Lt. Borman	9:58	12:37
Alice Bingham	10:12	11:28
Chuck Miranda	10:20	12:35
Harold Ford	10:41	11:15
DC Quincy	11:00	1:35
Agent 008	11:20	11:40
Ronda Ripley	11:43	12:00
Jeff Dangerfield	11:58	12:38
Stacy Simmons	12:04	12:41
Brock Ortiz	12:10	12:33
Pierce Bronson	1:38	2:08
Max Sharp	1:42	1:57
Maren Ezaki	1:47	2:05
Caroline Cress	1:58	2:13
Milly Osborne	2:07	2:15
DC Quincy	2:11	2:20
Vinney Gumbatz	2:38	3:08
Cory Delphene	2:40	2:47
Agent 008	2:45	
SECURITY	2:55	

As he approached the coroner's office, he had a strange feeling that something was wrong. When he opened the door, the sight inside stopped him in his tracks. Evidently, Dr. Dedman was now the *newest* victim of the Slasher. But wait! The other body, the one the doctor had been working on, was gone! Immediately, the security desk with its annoying sign-in sheet came to mind. Yes, there were lots of names on that list, but if he could determine the time of Dr. Dedman's death, he might be able to scan the roster to find the murderer! Quickly, he grabbed the thermometer to measure the Doctor's body temperature. He turned around and hit the security buzzer. The bells were deafening. He knew the building would be sealed off instantly and security would be there within seconds.

As the security officers crowded into the room at 2:55 pm, Agent 008 explained what he knew, which was almost nothing. He had stopped long enough to check the doctor's body temperature: 96.1°F. Then he remembered: the tape recorder! Dr. Dedman had been taping his observations; that was standard procedure. They began looking everywhere. The Slasher must have realized that the doctor had been taping and taken the tape recorder as well. Exactly an hour had passed during the search, and Agent 008 noticed that the thermometer still remained in Dr. Dedman's side. The thermometer clearly read 91.7°F. Knowing this, along with the fact that normal body temperature is 98.6°F, Agent 008 knew he could now determine the time of death.